

Development of lithium silicate-based CO₂ sorbent for fluidized-bed at high temperature

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The purpose of this study is development of lithium silicate-based CO₂ capture dry sorbent applicable to fluidized bed process at high temperature. The attrition resistant of the sorbent is important in a fluidized bed. The P48S sorbent developed in this study was prepared by use of a spray dryer and Attrition index (AI) of sorbent was measured by ASTM D5757 method. The P48S sorbent showed an high AI of 4.1%. In addition, the CO₂ capture capacities of the P48S sorbent maintained about 20 wt% during multiple cycles (sorption: 10 vol% H₂O and 10vol% CO₂ at 550°C; regeneration: N₂ at 700°C). As these results, we conformed that P48S sorbent developed in this study has the potential as a sorbent applicable to fluidized bed process at high temperature.